

Ontario
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Review

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FURBEARER MANAGEMENT





Why is a trapper? Roger Betz reveals the ties that bind a trapper to his calling.

Why a new trap? Gerry Wolfram, outdoor writer, explains our achievement better than we can.



Why a special issue? To report progress in furbearer management. The anonymity of our unsung experts is relaxed because one name came up at every turn — Milan Novak.

We also hail Fred Adams, Cecil Speers and Tom Bradley who helped to develop the better trap.

Our cover fox is relaxed although held by a foot-snare. The late Ted Jenkins took the back cover pic of conservation officer and trapper, 1957.

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The goal of the Ministry of Natural Resources is to provide opportunities for outdoor recreation and resource development for the continuous social and economic benefit of the people of Ontario, and to administer, protect and conserve public lands and waters.



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Ontario

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Humaneness

Concern about humaneness seems to be a condition of societies such as ours that have attained a relatively luxurious standard of living. Our society perceives itself as having achieved a high level of knowledge. Many people are aware of ecological principles, but others do not accept that man exists within a larger community of all living things.

Our newspapers carry numerous letters to the editor which make it apparent that most of the concern about humaneness emanates from the larger urban centres. Among those who work at farming or other rural activities or who earn their livelihood from natural resources, it appears that humaneness is less frequently an issue. Perhaps, because of their closer association with the natural environment, rural people accept and understand their roles in a system where all members, human and otherwise, are interdependent.

Humaneness defies universal comprehension. What is ethical to one may be unethical to another, and similarly, one's concept of humaneness may be totally different from another's. Both humaneness and ethics have their roots in behavior and thought to which most members of our society have become accustomed.

Trapping has received much criticism in recent years and some of it has come from humane trapping associations which wish to improve the methods by which furbearers are killed. Other critics are totally opposed to trapping regardless of the humaneness of the methods used. One wonders if there is any common ground on which most people can come to grips with the issue of humaneness.

Most of us appreciate that an animal or any other living organism is a wonderfully complicated arrangement of cells that has evolved over eons to occupy a niche on our planet. Wild things are of great interest to most of us and we find them aesthetically pleasing. When an organism dies, it may still be of value but it loses its aesthetic appeal.

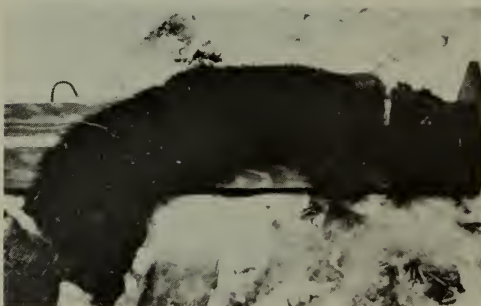
The question of humaneness arises when humans are responsible for the death of an animal. If the killer is incompetent and mutilates the animal, or prolongs the transition from life to death, the killing is repugnant and unacceptable by our standards of humaneness. There are some who feel that humaneness cannot be addressed in so narrow a context but requires consideration within the whole spectrum of behavior and interaction in the world community. They may well be right.

Humaneness depends a great deal on our competence as predators. To many the killing of furbearers is not morally wrong. It is an act of predation that provides food or other benefits to the trapper and those dependent on him. It is no more than one organism living off another in a dynamic system.

While the Ministry of Natural Resources provides for the trapping of furbearers, it continues to be deeply concerned about the humaneness of trapping methods. Our resource managers work closely with trappers to assist them in achieving the highest possible standard of humaneness.



This is a transplanted fisher. . .



. . .tranquillized and measured. . .



. . .and set free in new country.

Fisher planted in Bruce, Manitoulin

Report and photos by Howard Smith

Trappers will benefit from the planting of fisher on Manitoulin Island and the Bruce Peninsula. Thirty-six fisher will be transplanted annually for the next five years in a \$50,000 project funded by the Ontario Ministry of Northern Affairs. Because of successful management practices, Ontario has an abundant fisher population but the two release areas do not have fisher because of their isolated locations. Trappers in the Bancroft and Coldwater areas have been supplied with live-traps to capture the fisher as part of their regular quotas and at the

average price for each sex. The captured fisher are released in suitable habitat selected by management staff of the Ministry of Natural Resources in Espanola and Owen Sound Districts. The fisher released in Bruce Peninsula this year have been radio-collared to monitor their dispersal. Data on their movements, mortality, den sites, feeding and reproductive activity are being collected to assess the success of the transplant. Fisher will not be trapped in the release areas until the new populations are established.



Milan Novak was the first to receive the Jules Perron Conservation Award, presented annually by the Ontario Trappers Association to the person who contributes the most to the conservation of furbearing animals. Above left, Lloyd Cook, OTA president, presents the award to Milan in Maple in February, 1976.

Building a humane trap

by Gerry Wolfram

REMEMBER that old adage "Build a better mousetrap and the world will beat a path to your door?"

It's actually true, according to Milan Novak, biologist in charge of fur management in the Ontario Ministry of Natural Resources.

He didn't head up a research team to build a mousetrap, of course. His new trap is designed to catch valuable fur-bearing animals such as foxes and coyotes. But ever since the results of his work were announced last March, few days go by when he doesn't get letters or long-distance phone calls from someone, somewhere in the world, seeking more information.

"There's been a phenomenal interest in our work," he said. "It seems as though the

world was just waiting for someone to come up with a better answer to the leg-hold trap for land trapping."

From test results to date, including use of the new units by hardnosed trappers working in the field, the Novak trap appears to be not only a vast improvement over the traditional spring-clamp trap but is safer to use, easier to carry and, as far as the biologist can predict at the moment, should be a lot cheaper to manufacture.

Even better — and the real reason for the Ministry attempting to find a new and better way of trapping animals — is that the Novak trap is humane and answers the major complaints of those people upset by the suffering associated with trapped animals. They either want leg-hold traps

banned or trapping abolished completely.

Problems with leg-hold traps (originally designed in Europe in the early 1200s to catch human poachers) revolve around their normal inability to kill quickly on land. A trapped animal, locked in by spring-held jaws, usually "fights" the trap in attempts to escape.

The new trap, however, which Novak prefers to call a "live-trap," normally doesn't even scratch the animal caught in it. "Because there's no pain involved," he said, "the animal doesn't become aroused the way it does in a leg-hold trap. We've even had foxes lie down after several minutes (of being trapped) and go to sleep. Unwanted species, or prime breeding stock trappers may want to protect, or animals tagged by biologists for further study, can be released without harm."

About the only similarity between the old and new traps is that both depend on an animal walking into the trap and triggering it by putting weight on a pan. Instead of two jaws springing up to trap the animal, the Novak trap flips an aircraft cable snare up around the animal's leg at eye-blinking speed. It closes as the animal moves away. After that, it's held in place by a semi-circular locking device.

Just how fast the trap works is still unknown. To date, Novak hasn't been able to acquire a movie camera that takes enough pictures a second to measure accurately the speed of the snare. He estimates, from the filming that has been done at 500 frames a second, the time gap between the trap being triggered and the snare being flipped in position on the leg is somewhere between 20 and 40 thousandths of a second.

Another big difference in construction is that the snare is completely separated from the body of the trap once it's triggered. The one-sixteenth-inch cable is directly attached to a stake buried in the ground 76 cm (30 inches) away. This means, Novak pointed out, that any pull by the animal is horizontal, away from the stake. Most injury with old-style traps results from the jaws of the steel trap holding the animal's leg in a rigid, perpendicular position. The pull is upward with no flexibility or "give". As a result, the animal often panics.

A University of Toronto graduate with a master's degree in biology, this expert on

furbearing animals spent two years in northeastern Alberta as a regional biologist prior to returning to Ontario in 1969 as a biologist in the fur section of the former Department of Lands and Forests. Novak's associates in development of the trap were Fred Adams, retired design engineer of Barrie, described by Novak as a genius, and veteran trappers Tom Bradley of Creemore and Cecil Speers of Barrie.

"When we first started work in 1971, our main thought was to develop a trap which would kill immediately," Novak said. "Then, around 1974 I guess, we started attaching more importance to selectivity. A fox trap can also kill a family dog. And although there's a place for a quick-killing trap — underwater sets for muskrats for example — we've concentrated the last two or three years on a live-trap which would allow us to release any animals we caught."

The finished product is an offshoot of an idea used in the west in the 1800s to live-capture wild horses at water holes. A refinement, known as the Aldrich trap, has been in use throughout North America since the 1950s. "We trapped bears with Aldrich traps in Alberta," Novak recalled. "What we've really done here is modify it for use on smaller, trap-shy animals." Of course it wasn't that easy.

Dozens of ideas were sketched and studied, and 18 different working models made and tested before Novak settled on the present form of trap. Statistics compiled by the test team showed capture rates that were quite close for both old and new styles of traps. The escape rates were also similar.

One big reason for the success of the trap is the unique snare-lock designed by engineer Adams working in the basement of his home. It stops the snare from twisting as it closes. Another problem that had to be solved was finding a swivel for the snare wire that could be buried in soil and not jam. "You can even cover this trap with stones and it will work," Novak said.

The swivel is designed to break under pre-determined amounts of stress. If a bear walks into a fox set, for example, it will be able to pull the cable loose. Because of the snare design, the cable will then drop off the animal's leg.

Tests also revealed another unexpected bonus for trappers, especially those going



Northern trapper with take of mixed furs, representing different trapping techniques.

home to a family each night — the new trap doesn't work well on skunks. "The catch ratio was only 34 per cent compared to 97 per cent for the leg-hold traps — probably because of the animals' short legs and the way the trap was set," Novak said.

Another special advantage of the new trap is that animals somehow don't consider a live-trap to be dangerous, even after being caught in it. Novak's test crew has caught the same fox three times in a row. Double captures, taking the same animal twice, are common. Such occurrences with leg-hold traps are rare.

The new live-trap still isn't perfect. Its inventor says "We've had some swollen feet on thin-skinned animals left in a trap for 24

hours, although the swelling disappears once they're released, and there's a minor chafing problem, insignificant really, but we're working on it."

Not only should the live-trap be cheaper to buy but, unlike the leg-hold trap, only one size of trap is needed. You simply adjust the size of the snare loop if extra-large or extra-small animals are being trapped.

Discussions are now under way between trap manufacturers and the Ontario Ministry of Industry and Tourism with a view to putting the new live-trap on the market as soon as possible. The cost of the live-trap is expected to be about two-thirds the cost of a No. 2 leg-hold fox trap.



*Roger Betz, our guest author.
—Photo by Heather Bickle*

Why I trap

by Roger Betz
Co-ordinator, Ontario Trappers Association

Looking back, I don't know how I got started in my outdoor pursuits. Neither my parents nor my grandparents were trappers. Nor were they hunters. In fact, they really weren't interested in fishing, either. They did enjoy the bush though, and my recollections of early home life are of my father looking forward to escaping from the city whenever possible.

I remember that walking in the bush, walking along a creek, were more enjoyable than eating supper and many a one I missed because of these interests. As a youngster, I was either fishing, hunting or trapping. Those were the days before the rush of people to the streams and woods. A kid could fish all day and not be bothered.

When the frost came, fall hunting began. There were no Firearm Acquisition Certificates but instead, good parental guidance. Dad was familiar with firearms and his rules were forerunners of all gun safety programs — you don't point at anything you aren't going to shoot; you treat every gun as though it were loaded; if you can't

kill game cleanly, you don't shoot; Dad is with you or you hunt alone; being in the field with a gun isn't a gang sport. . . Wonder what he would think now?

I don't remember where my first trap came from, but I certainly remember my first muskrat. I was ten. I had six traps set in den entrances and next morning I had four rats. I soon found that the catching was only part of it. At that time, in fact, it seemed it was only 10 per cent because it took much longer to get them on the boards. Prices in those days were good. I sold my first rats, all 10 of them, for five dollars apiece. Money was not a prime consideration then. Of course, as I got older, that aspect of trapping became more important.

Since that age, with a few time-outs, I have trapped.

After an interruption of four years in the navy, the first thing I did when discharged was a bout of trapping — my own form of rehabilitation. Now when August rolls around, the bottom of my feet itch to get moving. I usually take long walks where scats or other sign can be found. This seems to relieve the itch a bit, though it persists until trapping season is open.

My wife, I am sure, thinks that trapping is a disease. When that time of year comes along, the symptoms are obvious. . . preoccupied, inclined to walk in the bush, fiddling with equipment, starting to smell funny, boiling steel traps. . . um humm.

Is the money in trapping important to me? Yes and no. I haven't run into a trapper lately who isn't interested in his pay cheque. In fact, the prices are part of the game. It wasn't too many years ago that trapping was my only winter income. Good prices meant better living, just as good wages do to any one else. I know trappers who exist on their trapping incomes year 'round and others who prize the beaver flesh for food and require it more than the pelt.

Though a trapper can never seem to explain it to an anti-trapper, I do like animals and have followed their progress over the years on my trapline. In the final analysis, I have seen, touched, and even talked to more furbearing animals than any

non-trapper. I have observed animals that are sick, lost their food supply, flooded out, seen their habitat destroyed. On the whole, they have very short lives.

My trapline farm continues to produce a good harvest. I have destroyed no habitat, caused no acid rain or other pollution. I fight the animal killers, starvation and disease. Strange as this may sound to some ears, my trapping activities ensure next year's healthy crop.

Years ago, someone asked me how I could spend so much time alone. I don't really, compared to most trappers. But you must be able to live with yourself before you can establish a lasting relationship with others. There is satisfaction in the ability to take care of oneself.

Why do I trap? I like the out-of-doors. I like the challenge of matching wits with the forest creatures. I enjoy employing the skills that are required to be a good trapper, and

constantly working to improve and update these skills. I appreciate my ability to earn my own income by a means that requires greater effort than most. I will never tire of seeing the sunrise over a frosty lake. I shall never cease to enjoy nature's original designs, whether a strangely placed and shaped beaver house, or an unusual rock or tree formation.

I like being dog tired at night, knowing that another and another day are ahead — exhausted yet hardly able to wait to visit that first trap tomorrow. My life is the smell of mink; the hard skinning of the otter; the taking of the beaver whose population needs this help to maintain its own health and that of many other species dependent on the habitat it creates; wet feet; cold hands; long paddles; being stuck in slush; high winds; low temperature. It's no free-way, but it's nature's own road and the only way for me to travel. That is why I trap.

CODE OF CONDUCT FOR TRAPPERS

- 1 Land sets should be inspected daily.
- 2 Raccoon, marten and fisher should be trapped only with Conibear traps.
- 3 Sliding locks should be used with all water or shore sets. Heavy weights should not be attached directly to traps set on shore.
- 4 A modified Conibear trap with the frames bent inward to ensure tighter closure should be used in trapping.
- 5 A very short trap chain should be used with leg-hold traps set on land to catch lynx, foxes, wolves or coyotes.
- 6 Traps should not be set where cats and dogs or other unwanted animals may be caught.
- 7 Feeding stations for birds and mammals should be maintained on the trapline.
- 8 Muskrats from over-populated marshes and beaver from ponds with inadequate food supplies should be trapped heavily.
- 9 Each trapper should assist farmers, cottagers and other landowners within his area who have problems with nuisance animals.
- 10 Diseased animals should be reported or submitted to the Ministry of Natural Resources promptly.
- 11 The meat from beaver, muskrat, raccoon and lynx can be eaten. Carcasses not used for human consumption or bait should be fed to other wild animals.
- 12 Provincial and local trapper's councils deserve trappers' support.
- 13 Trappers should teach their children or other interested young people how to trap, care for pelts and take care of themselves outdoors.
- 14 Black bear should be trapped only with foot snares.

A cat in the dog house

by Carl Monk

Enforcement Specialist, Northern Region

IT was 1540 hours on an unseasonably cold and wintry October 24, 1979. Conservation Officer George Oram and I were working the afternoon shift out of Foleyet. About 25 km east of Foleyet we came to a locked gate just off Highway 101 on a road leading south and east into some Johns Manville mining properties. The moose season was in full swing and the security guard must have concluded our purpose for entering the property was to check moose hunters. "You catch many poachers this season?" he asked.

"One or two," I replied, and let it go at that.

Naturally, we'd check moose hunters if we encountered any — especially behind the gate. Hunters behind gates tend to take more liberties than those out on the main roads. But the purpose of the trip was not hunters but trappers — precisely one trapper.

Word had come into the Timmins office the day before that a particular trapper was jumping the gun on the trapping season in the vicinity of Johns Manville properties. The information was sketchy but led us to believe the trapper was guiding moose hunters near Montgomery Lake, 15 km by bush road and another 12 km via an all-terrain vehicle. He was supposed to be trapping some two townships west of his registered trapline and to be alternating between camps at Bush Lake and Montgomery Lake.

We could drive to Bush Lake with the four-wheel-drive half-ton truck George had managed to negotiate from the Chapleau office for the purpose, and if daylight held, we could walk to Montgomery Lake. Our tentative plans were to dry-gulch him somewhere between the two lakes.

The trapping season in this area would not open until tomorrow, October 25, and if we caught up with the trapper we'd have him on at least two counts — trapping during closed season and trapping off his grounds.

Fresh snow, 15 cm of it, covered the road

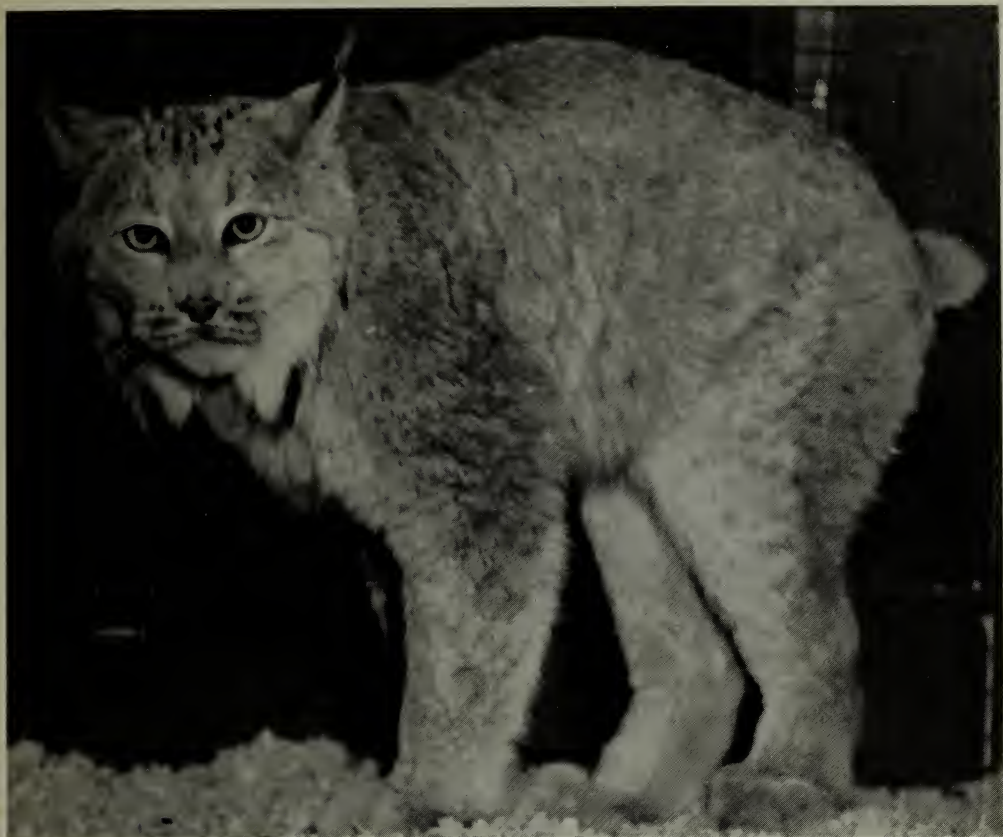
east to Bush Lake and there wasn't a tire track west of the Nat River. After fording the Nat, we picked up some boot tracks going to and away from the river — following the road. About 2 km from Bush Lake, we came across a hunter on watch near a frozen pothole. He was well outfitted with blaze orange hat and jacket, high powered rifle and a moose licence. Half frozen from standing still for so long, he was eager to talk.

We were impatient to get going but became instantly alert when he started talking about the local trapper getting a live lynx in his trap, and having permits from the Ministry of Natural Resources to catch a dozen live lynx for some special project. We listened carefully and tried to act nonchalant. Things were beginning to shape up; we started thinking about what the fine might be after we caught him.

After reaching the hunter's camp at Bush Lake, we discovered a half-ton truck and two trailer camps. Sorting out tracks in the snow took considerable time. Finally, we decided on a set and followed them about 3 km into the bush in what we thought was the direction of Montgomery Lake. After about an hour, the road and trail ran out and we found ourselves talking to a moose hunter in a black spruce swamp. He was on his way back to Bush Lake and we were obviously on the wrong trail. We decided to return with the hunter.

Along the way back, he too became talkative. It seems he was with the trapper when the live lynx was caught, the trapper was his guide and we were one day late — the trapper had returned to Montgomery Lake that morning. But he gave us a blow-by-blow account of the live capture of a Canada lynx. (I took notes when he wasn't looking.) The lynx, he stated, was at this moment alive and well, back at the trapper's residence between Foleyet and Timmins, just off Highway 101.

By the time we got back to the camp at Bush Lake, it was dark. We had a coffee with the hunter, listened to a half-dozen



A live lynx, if it could be delivered, would fetch \$1,000.

more stories, and headed back to Foleyet. We were tired, cold and hungry but determined we'd get that lynx with a search warrant.

We arrived back at Foleyet about 2030 hours. I wasted no time telephoning Fish and Wildlife Supervisor Wilson Sinclair in Timmins. I explained the events of the afternoon and asked "Can you get hold of the J.P. to sign a search warrant to get that lynx?"

"You're too late," replied Wilson, "We already got it. We searched him this afternoon about five o'clock. The boys really hit the jackpot. Bert Massie was in charge of the investigation and he can fill you in on the details."

The trapper had been seen with a live lynx in the back of his truck on Highway 101 around noon that day, and this information had come into the Timmins office early in the afternoon. Wilson Sinclair called a strategy meeting with Conservation Officers Bert Massie, Bill Martin and

Walter Cheguis. In the light of the previous information and this latest tip, they obviously had grounds for a search warrant. Walter Cheguis would track down a suitable Justice of the Peace and obtain a warrant to search all the premises of the trapper.

Meanwhile officers Martin and Massie would check out trapping activities near the suspect's trapping cabin, 12 km from his residence.

Two trails leading into the bush from the cabin looked inviting. Bert and Bill charged up the trails like bird dogs hot on the scent of a wounded partridge. A short distance from the cabin Bill came across a torn down cubbie — a shelter built with sticks, stumps and conifer branches to house bait and traps — usually less than a metre high and about half a metre across. Tied to a pole near the cubbie was a set trap (No. 3 Victor foot trap). Adhering to the jaws of the trap were several hairs that looked like they had once belonged to a Canada lynx. Adjacent to the cubbie was a forked pole with similar

hairs at the ends of the two forks. Bill took the pole and the trap and returned to meet Bert.

"That's what he used to pin the lynx down, and get it into a bag," he said.

"We'll take it as evidence along with the trap," replied Bert. "Let's get back to the truck and go meet Walter. We better search him right away before someone tips him off we're in the country."

Officers Massie, Martin and Cheguis arrived at the trapper's residence about 1700 hours. He wasn't home. They informed his family of the complaints received and of their warrant to search the premises.

In the garage, a short distance from the house, the officers examined a dilapidated dog house. It spit back at them.

"He's converted this dog house into a cat house," said Bill. That's a fair size lynx he's got in there."

"We'll take dog house and all," said Bert.

In the freezer, the officers found more evidence of pre-season trapping. By the end of their search, they had confiscated three lynx pelts, 49 marten, two mink, four beaver skins and four whole (unskinned) beaver

ver — all trapped out of season.

"This guy must have started in August, to get that much fur," said Walter. "Either that or he's fencing it for poachers."

The officers estimated the value of the fur at \$3,000 and they knew the live lynx was worth an even \$1,000 to a licensed fur farmer anxious to raise lynx.

They returned to Timmins with their catch, advised the Justice of the Peace on the accuracy of their information and the results of their search, and consulted with Supervisor Sinclair. It was decided to free the lynx and Officers Massie and Martin took it back to the bush where it was caught and let it go. No doubt it was grateful to get out of that run-down dog house.

Charges against the trapper were laid the following day by Officer Massie for illegal possession of fur and trapping during closed season.

Trial was held in provincial court, Timmins, on December 4, 1979. The trapper was fined \$500 and his fur was confiscated. The fur was to be sold at the fur auction of the Ontario Trapper's Association in North Bay in January, and the proceeds to be payable to the Treasurer of Ontario.



A trapper skins a muskrat for fur worth about \$5. The meat is used too.



Fred Adams, design engineer, studies the feet of a fox in the Ministry's rabies research compound; then he corrected the foot-snare live-trap.

The new foot-snare live-trap And the leg-hold trap — A comparison

by Milan Novak
Fur Management Co-ordinator, Wildlife Branch

THE leg-hold trap has become the focus of the anti-trapping movement around the world. Its major weaknesses are non-selectivity and a potential for mutilating animals especially if used by inexperienced persons. In Ontario, problems have occurred when the leg-hold trap was used for trapping foxes, coyotes, wolves, coyote-dog hybrids, raccoons and feral dogs.

The Ontario Ministry of Natural Resources began trap research in 1972 to improve traps and trapping methods. Both quick-killing devices and live-traps were studied. In addition, the Ministry provided substantial financial and technical assistance to private inventors and to the Federal Provincial Committee for Humane Trapping.

It was soon realized that live-traps had a distinct advantage over quick-killing traps from a humane, economic and animal management point of view. They allowed

greater selectivity in species, sex and age-group harvest. If a trapper, researcher, fur-bearer manager or sheep farmer with a predation problem had a choice, clearly, a live-trap would be preferred over a quick-killing trap in almost all cases.

Once the decision was made to concentrate on live-traps, the objective of the trap development program was to develop a light, inexpensive alternative to the leg-hold trap for trapping the above-mentioned animals. Because of the success of the Aldrich Bear Snare, it was decided to work on the snare principle.

The concept of snaring an animal by the foot is not new and actually preceded the leg-hold trap which was invented sometime in the early Middle Ages to catch poachers. The Egyptians had a working foot-snare trap as early as 3000 B.C. Several patents have been granted for foot-snare traps in

North America. One of the earliest, about 100 years ago, was designed to catch wild horses.

An early prototype of our foot-snare was tested on four captive-raised foxes which were released in a large enclosure. When they were caught they struggled to escape from one to three minutes and then ceased to struggle. Most importantly, they did not chew the snare.

The purpose of this report is to compare the leg-hold trap with the new foot-snare live-trap developed through the Ministry's research program.

I am especially grateful to Fred Adams, Cecil Speers and Tom Bradley for assisting in the development and field testing of the new live-trap. Valuable assistance in the early stages was provided by Lloyd Cook, President of the Ontario Trappers' Association.

Trapping Methods

Cecil Speers and Tom Bradley are both experienced trappers. They tested both the live-trap and the leg-hold trap independently from August 27 to November 30, 1978, and from May 24 to December 1, 1979. All their traps were boiled in Gillett's lye to clean them, aired to oxidize and freshen them, treated with logwood crystals to blacken them, and waxed to prevent rusting. For experimental purposes, one of the trappers did not blacken or wax his snares from October 15 to December 1, 1979, and occasionally before this period.

All the trapping was done on agricultural land in southern Ontario. Both types of traps were used and set in the manner to which each trapper was accustomed. Before October 15, 1979, each trapper decided which trap he would use in a particular set location; from then to December 1, 1979, the trappers chose the trapping site and then selected the trap type at random.

The traps were set mainly for foxes and occasionally for coyotes. No attempt was made to standardize the scent and bait used to attract the animals. Both trappers used pure fox or coyote urine, commercial fox scent preparation (Hawbaker's Wiley Red), and the meat of sheep, groundhogs, rabbits and cockerels obtained from a hatchery.

Sets were categorized by method: (1) dirt hole, (2) trail or (3) scent post sets. And by

location: (1) sandy or (2) clay soil. All traps were checked daily and records kept of captures, misses and escapes. Misses and escapes were determined by track and hair identification. During the first trapping period, the location of closure of the leg-hold trap or snare on the animal's leg was noted.

Injuries were recorded in the field as (1) no injury, (2) skin rubbed and/or superficially scratched or nicked, (3) skin cut with flesh and/or tendons exposed, (4) tendons cut and/or bones broken, (5) chewed feet and (6) wring-offs. Swelling in the entrapped foot was recorded as (1) no noticeable swelling, (2) slight or minimal, (3) moderate and (4) badly swollen. In the fourth category, toes and pads were greatly distended and the animal could not stand on the affected leg when released.

The capture rate, expressed as a percentage, gave the proportion of animals that were caught and held (plus those that subsequently escaped) out of the total number of times the traps were discharged. The escape rate expressed the percentage of animals that were caught and held for a period of time (but eventually escaped) out of the total number of captures plus escapes. Animals digging up traps were not used to calculate the capture rate. Animals stolen from traps were considered to be captured. Statistical significance was set at the 95 per cent level of probability, except where noted.

Results of Trap Testing

During the two years of field testing, the foot-snare live-trap was set 3,390 trap nights and the leg-hold, 1,562 trap nights. For research purposes, the two trappers were referred to as Trapper A and Trapper B.

Two hundred and twenty-seven animals were captured in foot-snare live-traps and 101 in leg-hold traps (Table 1). The fox capture rate was 89 per cent for the foot-snare traps and 85 per cent for the leg-holds. The trappers unnecessarily missed four to six foxes and some raccoons the first year because the animals discharged the foot-snares by stepping on the back part of the trigger arm and on the cable at the same time. This problem was solved by using a trigger guard (Fig. 1) which allowed the trap to be released only if the animal was standing

—Continued on Page 16

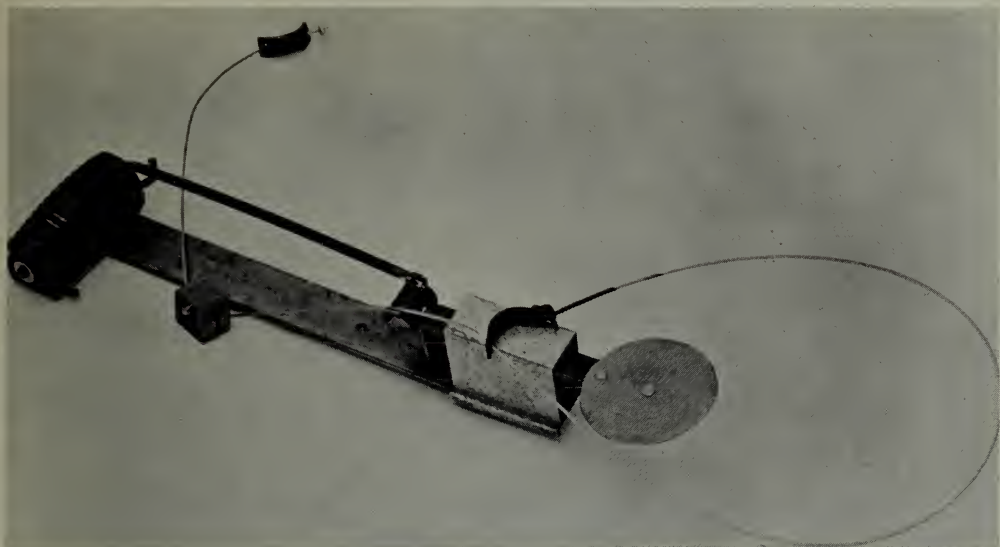


Fig. 1. The new foot-snare live-trap. The snare is 76 cm (30") in total length. The loop cable is 62 cm (24-1/2") long. The galvanized airplane cables tested were 1.6 mm (1/16") and 2.4 mm (3/32") thick having a 7 x 7 and 7 x 19 weave, respectively. The breaking strengths of these cables were 218 kg (480 lbs) and 417 kg (920 lbs), respectively. One of the features of the specially designed snare lock is that it falls off the animal's leg if the animal escapes by chewing through or breaking the cable.

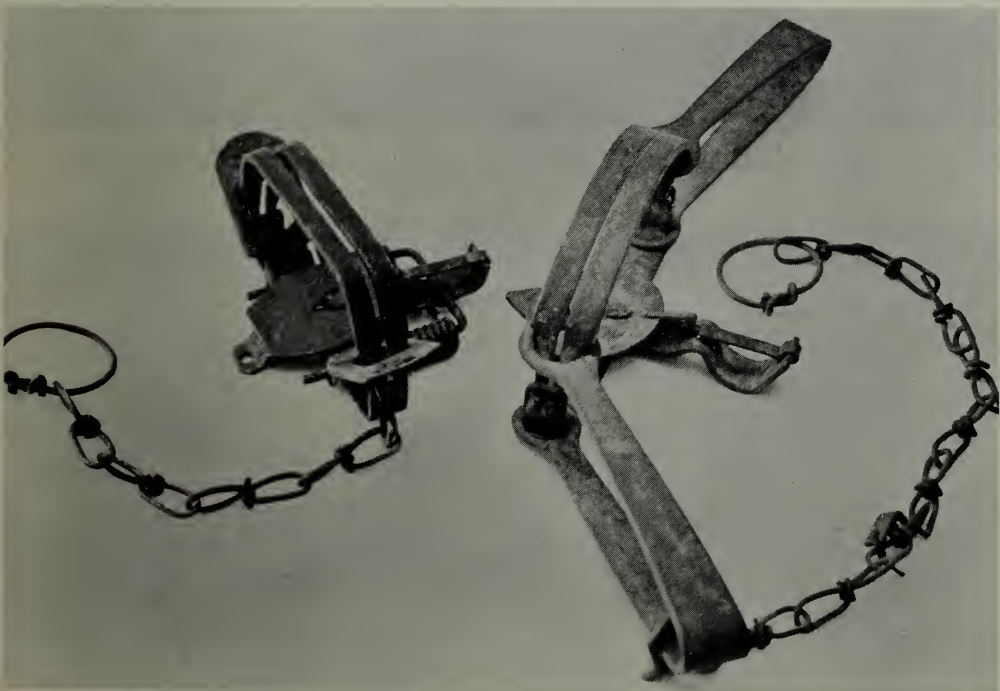


Fig. 2. The No. 2 coil spring leg-hold trap (left) was the trap most commonly used in the field tests. The No. 4 long spring leg-hold trap was used infrequently in coyote sets. Note the welding on the inside of the trap jaws and the shortened chain. The welding was intended to reduce the pressure on the animal's leg by keeping the jaws 3-4 mm open. The shortened chain was used to minimize the animal's lunges.

Trappers follow nature's road.



Preparing to lower a beaver set below the ice.



Pulling up a trapped beaver from



Examining fisher (left) and marten pelts.



Skinning muskrats in the marsh.

ey work hard... Alone but not lonely.



he ice.



Stretching a beaver pelt on a board to dry.



Tending a muskrat trapline in a marsh.

Table 1. Capture Rates for Foot-Snare and Leg-Hold Traps
August 27 to November 30, 1978, and May 24 to December 1, 1979

Captured Animals	No. of Times Trap Discharged		No. of Captures* plus Escapes	
	Foot-Snare	Leg-Hold	Foot-Snare	Leg-Hold
Colored Fox (<i>Vulpes vulpes</i>)	99	27	88 (89%)	23 (85%)
Grey Fox (<i>Urocyon cinereoargenteus</i>)	1	—	1 (100%)	—
Raccoon (<i>Procyon lotor</i>)	113	34	64 (57%)	26 (76%)
Coyote (<i>Canis latrans</i>)	8	2	8 (100%)	1 (50%)
Dog (<i>Canis familiaris</i>)	15	7	10 (67%)	7 (100%)
Coyote-Dog hybrids	2	—	2 (100%)	—
Skunk (<i>Mephitis mephitis</i>)	47	36	16 (34%)	35 (97%)
Cat (<i>Felis catus</i>)	8	1	7 (88%)	1 (100%)
Porcupine (<i>Erethizon dorsatum</i>)	5	3	5 (100%)	2 (67%)
Groundhog (<i>Marmota monax</i>)	23	3	8 (35%)	3 (100%)
Rabbit (<i>Lepus europaeus</i>)	5	1	1 (20%)	1 (100%)
Deer (<i>Odocoileus virginianus</i>)	3	—	2 (67%)	—
Red Squirrel (<i>Tamiasciurus hudsonicus</i>)	1	—	0 (0%)	—
Weasel (<i>Mustela erminea</i>)	—	1	—	1 (100%)
Turkey Vulture (<i>Cathartes aura</i>)	1	—	1 (100%)	—
Song Birds	3	—	0 (0%)	—
Sheep	13	2	6 (46%)	1 (50%)
Cattle	9	—	0 (0%)	—
Horse	6	—	0 (0%)	—
Unknown	21	6	5 (24%)	0 (0%)
Total	383	123	227	101

*Capture rates in brackets

Table 2. Escapes from Foot-Snare and Leg-Hold Traps
August 27 to November 30, 1978, and May 24 to December 1, 1979

Captured Animals	Foot-Snare				Leg-Hold	
	Chewed Through Cable	Pulled out or Opened Snare	Solder/Nut Pulled off or Chewed Off	Snapped Cable	Pulled out of Trap	Wring-Off
Colored Fox	—	4	—	—	—	3
Raccoon	4	11	—	—	3	—
Coyote	—	1	1	—	—	—
Dog	—	1	1	—	—	—
Coyote/Dog	1	1	—	—	—	—
Skunk	—	2	—	—	—	—
Cat	—	1	—	—	—	—
Deer	—	—	1	1	—	—
Unknown	2	5	—	—	—	—

squarely on the pan and therefore in the centre of the snare.

The coyote and feral dog capture rates were 80 per cent using foot-snares and 89 per cent using leg-holds, but the sample was small for both traps (Table 1). Fifty-seven

per cent of all the raccoons setting off the foot-snare traps were caught while 76 per cent of those discharging the leg-holds were captured. Twelve raccoons were missed in two foot-snare live-traps located close together over a period of 16 nights. These traps

Table 3. Types of Injuries* from Foot-Snare and Leg-Hold Traps

Captured Animals	No Marks		Rubbed Skin,Nicks		Cut Skin		Cut Tendons Broken Bones		Chewed Feet		Wring-Off		Total	
	FS	LH	FS	LH	FS	LH	FS	LH	FS	LH	FS	LH	FS	LH
Colored Fox	56	5	23	2	2	8	—	4	—	—	—	3	81	22
Grey Fox	—	—	—	—	—	—	1	—	—	—	—	—	1	0
Raccoon	40	11	8	3	—	3	—	5	1	—	—	—	49	22
Coyote	2	—	3	—	—	1	—	—	—	—	—	—	5	1
Dog	8	2	—	1	—	1	—	—	—	—	—	—	8	4
Skunk	12	12	—	1	—	2	—	1	—	14	—	—	12	30
Cat	6	—	—	—	—	—	—	1	—	—	—	—	6	1
Porcupine	5	2	—	—	—	—	—	—	—	—	—	—	5	2
Groundhog	8	1	—	1	—	—	—	1	—	—	—	—	8	3
Rabbit	1	—	—	—	—	—	—	1	—	—	—	—	1	1
Weasel	—	—	—	—	—	—	—	1	—	—	—	—	0	1
Turkey Vulture	1	—	—	—	—	—	—	—	—	—	—	—	1	0
Sheep	6	1	1	—	—	—	—	—	—	—	—	—	7	1
Total	145	34	35	8	2	15	1	14	1	14	0	3	184	88

*In a few cases, captured animals were stolen or injury data were not recorded.

Table 4. Swelling* Caused by Foot-Snare and Leg-Hold Traps

Captured Animals	None		Slight		Moderate		Extensive		Total	
	FS	LH	FS	LH	FS	LH	FS	LH	FS	LH
Colored Fox	55	9	25	4	1	2	—	1	81	16
Grey Fox	1	—	—	—	—	—	—	—	1	0
Raccoon	41	13	8	2	—	5	—	2	49	22
Coyote	2	—	3	1	—	—	—	—	5	1
Dog	7	2	1	2	—	—	—	—	8	4
Skunk	11	14	1	4	—	1	—	—	12	19
Cat	5	—	—	—	1	—	—	1	6	1
Porcupine	5	1	—	—	—	1	—	—	5	2
Groundhog	8	2	—	1	—	—	—	—	8	3
Rabbit	1	—	—	—	—	1	—	—	1	1
Weasel	—	1	—	—	—	—	—	—	0	1
Turkey Vulture	1	—	—	—	—	—	—	—	1	0
Sheep	7	1	—	—	—	—	—	—	7	1
Total	144	43	38	14	2	10	0	4	184	71

*In a few cases, captured animals were stolen or swelling data were not recorded.

were repeatedly discharged by a family of small raccoons. Excluding these cases, the adjusted raccoon capture rate was 63 per cent for the foot-snare.

Two white-tailed deer were caught in snares and both escaped on their first jump. One deer stripped the knob of solder at the end of the wire and the other snapped the 1.6 mm cable. In the latter case the snare fell off the deer's leg within 5 m of the set.

Statistical tests showed that there was no significant difference in the capture rate for canids and for the adjusted raccoon rates by foot-snare or leg-hold traps over the two years of trap testing. A significant differ-

ence in capture rate was found for skunk. Only 34 per cent of skunks discharging the foot-snare were caught as opposed to 97 per cent captured by leg-holds (Table 1). This difference may be a function of how the live-trap was set rather than of the trap itself. Trapper A, whose dirt hole sets in 1979 were made as shown in Fig. 4, caught 10 of 11 raccoons and three of three skunks discharging the snares during the random trap period in 1979. Trapper B caught only 10 of 18 raccoons and two of nine skunks discharging the snares.

Analysis of the data collected during the random trap distribution period showed



Cecil Speers with part of his season's catch of colored fox pelts.



Tom Bradley prepares a dirt-hole set — very carefully.

that out of 1,157 trap nights, foot-snares were discharged 96 times giving an over all rate of 0.08 discharged foot-snares per trap night. The leg-hold traps were set 761 trap nights and were discharged 50 times or 0.07 times per trap night.

The foot-snare was set in 51 different locations and the leg-hold trap in 43 different locations. The frequency of trap discharge was calculated for each location. Statistical tests showed no significant differences in the number of discharged traps per trap night between the foot-snare and leg-hold traps.

The graph in Fig. 3 used 20 foot-snare sets and 27 leg-hold sets of ten trap nights each. It showed a significant decline in the number of animals captured on the tenth as opposed to the first trap night. This rate of decline, however, was similar for the foot-snare and the leg-hold traps.

These analyses of the random trap distribution period indicated that there was no significant difference in the frequency of

discharged foot-snare and leg-hold traps.

Fourteen per cent of the captured canids and raccoons escaped from the foot-snares and 11 per cent from the leg-holds (Table 2). Trapper B accounted for the majority of the escapes (six of the seven cases of chewing through the cable and 18 of 26 cases of animals escaping out of the snares). This may be due to the fact that Trapper B did not blacken the snare wire, causing captured animals to bite the cable and snare lock more often than if the snare wire had been blackened. Twenty foxes and raccoons captured by Trapper B bit the cable significantly more often than 19 animals captured by Trapper A (an average of 6.2 and 3.8 times per cable, respectively).

Tests on captive foxes, raccoons and coyotes showed that these animals were attracted by shiny objects and therefore bit objects such as untreated airplane cable or even small silver nuts.

Tests to date on more than 50 captive raccoons, five coyotes and several dogs showed

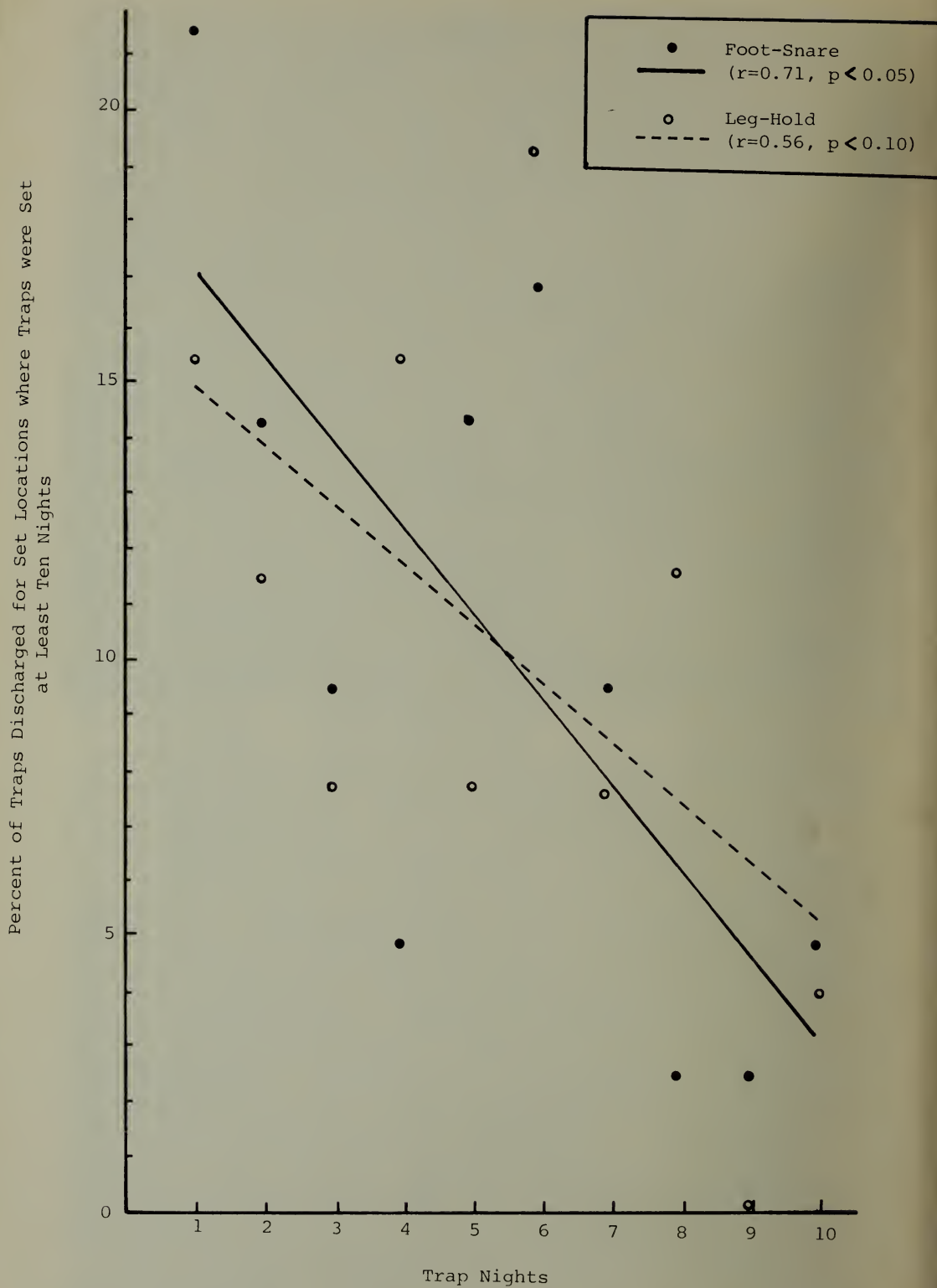


Fig. 3. Rate of discharged traps on the first ten trap nights.



Cecil Speers nets a live-trapped fox so it can be tranquilized.

that the snare lock and 1.6 mm cable fell off the animal's legs in less than 10 seconds after the cable was cut — except for one raccoon which still had the snare on eight minutes after being released. The 1.6 mm cable and snare lock did not come off three captive foxes after the cable was cut but then none of the captured wild foxes managed to bite through even the thinnest strand of cable. None of the wild-caught animals (five foxes, three raccoons, five coyotes, four dogs and one skunk) chewed through the 2.4 mm cable.

There was a considerable difference in the injuries caused by the two traps (Table 3). Ninety-eight per cent of the animals captured in foot-snares had either no marks, or just rubbed skin or nicks on their legs, as compared to 48 per cent of animals caught in leg-holds.

There also seemed to be a difference in the results between the two trappers. Over the two years, 90 per cent of all animals caught by Trapper A (who blackened his cable) had no marks on their legs, nine per cent had rubbed skin or nicks, and one animal had a broken carpal bone. Trapper B had only 64 per cent of the captured animals with no marks while 32 per cent had

rubbed skin or nicks. In addition, two foxes had cut skins, and one raccoon had partly chewed its foot after wrapping the cable very tightly around the trap. These results showed a significantly greater degree of struggling by animals caught in foot-snares by Trapper B — a supposition supported by the greater number of bite marks on the wire.

Discussion

The equipment used by both trappers was identical; however, Trapper B's snares were generally not blackened. Excessive biting of the cable probably caused the two cases of cut skin recorded by Trapper B.

Previous experiences with traditional snare locks showed that if the ensnared foot could rotate even slightly within the snare, it could result in a cut skin and even, in one case, severed tendons. These traditional snare locks used copper crimps to attach the cable or plastic tubes over the cable to prevent it from closing too tightly on the animal's leg. Examination of the snare that had cut the skin of one of the foxes showed that the snare was kinked from being bitten and, consequently, was loose on the foot.

Animals caught in either foot-snares or

leg-holds did not damage their teeth by biting on the traps.

The snare did not hold the leg as rigidly and tightly as the leg-hold trap, and as the snare was very light and flexible there was no continuous and excessive pain associated with it. The snare on the animal's leg weighed less than five grams, whereas the No. 2 and No. 4 leg-holds weighed 540 g and 960 g, respectively. The live-trap weighed 450 g but fell free once the animal was caught in the snare.

The degree of swelling (due to blood constriction) caused by the two traps could not be compared readily since the leg-hold traps tended to cut the leg allowing blood and fluids to drain, thus reducing swelling. Seventy-eight per cent of the animals captured in the foot-snare had no swelling, 21 per cent had slight swelling, one per cent had moderate swelling and none had extensive swelling (Table 4).

Again, there was a significant difference in the results for the two trappers with Trapper A recording a reduced degree of swelling. This was attributed to the reduced amount of struggling by Trapper A's animals. For example, 80 per cent of the foxes and 88 per cent of the raccoons captured by Trapper A had no swelling in their paws. Only 60 per cent of the foxes and 76 per cent of the raccoons captured by Trapper B showed no swelling. These differences were statistically significant.

As part of the Ministry's rabies research program, many of the foxes were ear-tagged and fitted with radio transmitters prior to release. This enabled us to observe how quickly the trap-related swelling subsided. Minimal and moderate swelling subsided as soon as the snare was removed. The worst case of swelling was encountered in an adult female fox; the swelling in the front paw took two to three hours to subside. Fifteen days later this animal was recaptured by a hind leg in a foot-snare and the previously snared leg looked normal except for some rubbed hair.

The live-traps caught the animals significantly higher on the leg than the leg-hold traps. Eighty-seven per cent of the animals were snared above the paws whereas only 34 per cent were caught that high by the leg-holds. Because of this, the live-trap may prove useful under deep and dry snow con-

ditions. We have not tested it in deep snow but we caught one fox when there was 10 cm of snow over the top of the trap. Not enough data was collected to make comparisons between the 1.6 mm and 2.4 mm cable or the No. 2 and No. 4 leg-holds.

The trappers reported that the foot-snare withstood rain better than the leg-hold which generally had to be reset once it rained. Frost had the same effect on the foot-snare and leg-holds. Both traps became inoperative when the ground froze and the animals could not depress the trigger.

To date we have not tested the foot-snare in water sets. It is doubtful if the trap can be made to work in water except perhaps under certain circumstances where animals such as otter are walking through shallow water. A potential exists for modifying this trap for catching large long-legged birds for research studies.

Particular problems could arise with the use of the foot-snare live-trap in certain areas where deer or bear might be caught accidentally. Two safety release systems (to avoid such occurrences) have been designed for use with the foot-snare. These ensure that they release captured animals which exert more than a predetermined force on the snare. The Ministry is perfecting these designs and testing the prototypes.

Field testing continues and emphasis is placed on learning how to trap after freeze-up and how to trap animals such as fisher and lynx. More field testing is needed in trapping coyotes with the foot-snare.

In summary, field results to date have shown that the foot-snare is just as effective in capturing furbearers as the leg-hold trap but with a greatly reduced injury rate. Although the two trappers were initially skeptical of this new device, they eventually expressed preference for the foot-snare over the leg-hold trap because of the foot-snare's comparable efficiency and greater humane-ness.

Patent applications for the foot-snare live-trap have been filed in Canada and the United States. An 18-minute film on the foot-snare is available on loan from:

Information Services Branch
Ministry of Natural Resources
Toronto, Ontario
Canada M7A 1W3



Northern trapper with fur catch at Hudson's Bay trading post about 1900.

Furbearer management in Ontario

by Colleen Parkes, *Biologist, Wildlife Branch*

and Milan Novak, *Fur Management Co-ordinator, Wildlife Branch*

TRAPPING is the oldest industry in Ontario and the province is still one of the world's chief suppliers of fine-quality wild furs. The whole story of the industry covers more than three centuries of our history.

Today trapping is governed by regulations and policies administered by the Ministry of Natural Resources and by traditional rules. However, the basic element in fur management is co-operation. Trappers, as individuals, or through their local or provincial councils, work with Ministry of Natural Resources staff in developing sound management programs. This co-operation between the trapper and the wildlife manager is the key to the success of Ontario's fur management programs.

These broad programs include licences, open and closed seasons, quotas, registered traplines, pelt sealing, research and trapper workshops.

Events and conditions in Europe played a major role in the development of the fur trade in Ontario. In the 16th century an expansion of agriculture and a lack of fur management had caused a scarcity of furbearers in the Old World. Felt hats, manufactured from beaver hair, became highly fashionable in the early 17th century, and this sparked the fur trade in the New World. Beaver pelts were the most sought after fur.

The fur trade began in Ontario when the French explorer Brule obtained fur from the Algonquin in 1611 near Georgian Bay. A few years later, Champlain was granted



Typical Ontario scene. . .trapper, beaver lodge, beaver, another trap set.



Traditional way of drying beaver pelts in northern Ontario, 1948.

the first fur trade monopoly by the King of France, but this was soon challenged by agents from Dutch and English traders. The fierce competition for furs led to intermittent wars between European traders and various Indian tribes who acted as their agents.

In 1670, King Charles II granted the Hudson's Bay Company exclusive fur trading rights on all the land draining into Hudson Bay and James Bay but it was another 150 years before the Company finally gained complete control of the fur trade. In the meantime, the competitive trading and intensive trapping had caused serious declines in fur-bearer populations.

In 1860, the first law controlling the trapping of fur-bearing mammals in Ontario was passed by the legislature of Canada West as Ontario was known at that time. The law established seasons on six species

— beaver, muskrat, otter, mink, marten and fisher. For the next 55 years, the seasons were adjusted and often closed in an effort to halt the decline in these species. However, law enforcement was almost non-existent and the fur harvest continued to shrink.

In the period between 1916 and 1945, Ontario began to develop strict control of its fur resources. New and tougher laws were passed. Trappers and fur dealers were controlled, for the first time, through licensing.

The sealing of pelts was introduced in 1916 to stop illegal trafficking in furs. Coupons had to be attached to beaver and otter pelts before they could be offered for sale. Today, the pelts of fisher, marten, mink and lynx must also be stamped with the provincial emblem. The stamp or seal provides control over harvests and sales, and is also



The leg-hold trap, humane in some cases (as above for beaver) but often misused.

useful as an advertisement of Ontario's wild furs.

A system of royalty payments was started and export permits were required for foreign sales. Seasons were reduced in some areas and closed in others. Houses and dens of some species were protected. Game preserves were established. Game wardens were hired to enforce the new trapping laws and penalties were increased. It took a while but the regulations had a positive effect. For the first time in many years, furbearer populations in Ontario began to rise.

By 1945, the value of fur management was recognized. It was also about this time that the trappers and fur managers decided a more co-operative effort was required. While the trapper needed good management of the resource to ensure an abundant supply, he was recognized as a valuable source of information about the biology and habits of furbearers — information the managers needed to develop their programs.

Within a few years, the registration of traplines on Crown lands became law, and with financial assistance from the federal government because of its responsibilities to native peoples, a trapline system of management began. Trapline management officers were appointed, and meetings were held with trappers across the province.

Seasons were extended with quotas to include fisher, marten, lynx and wolverine, along with beaver and otter. In addition, all pelts under the quota system had to be sealed before they could be sold. Trappers were required to submit a map of their traplines with the location of all beaver lodges marked on it. Finally, a provincial association and local trappers' councils were formed. The Ontario Trappers Association was established, in part, as a marketing service so that Ontario's trappers could receive a more realistic price for their pelts.

In the early post-war period, fur-bearer populations in Ontario continued to increase, but in the 1950s and early 1960s,



North Bay warehouse of Ontario Trappers Association, a mecca for foreign buyers.



Castor canadensis. The beaver was the foundation of the fur trade. It still is.

the fur industry went into a recession because of low consumer demand.

As fur prices fell and harvest was reduced, the effects of over-crowding among furbearing animals began to appear. Rabies destroyed fox populations in the north, kidney worms infected many wild mink south of Parry Sound, and tularemia killed beaver in northwestern Ontario. Soon, the transplanting of beaver, fisher and marten to areas of low population became an important part of fur management.

The fur industry has recovered from that period of depression and now appears to be in a healthy condition. Furbearer populations and trapper harvests are at the highest levels ever recorded in Ontario. There are now about 15,000 licensed trappers in Ontario and they operate under a comprehensive system of management programs.

Fur management in Ontario will continue to be progressive and make certain that the use of the resource is wise. It will also make sure that the harvest does not exceed the capacity of the environment to replace what is taken so that it will continue as a renewable resource.

In Ontario, the Ministry of Natural Resources and the trappers work together to achieve this goal. The Trappers' Code of Ethics is a set of self-imposed rules of conduct adopted by the trappers to control the use of undesirable trapping devices or techniques and to promote desirable habits.

Registered traplines

Crown land in Ontario is divided into more than 2,800 registered areas called traplines. Every trapper on Crown land is assigned a specific trapline and given the exclusive trapping rights for that area. As a result, competition is eliminated and each trapper can manage the fur resources on a long-term basis. The traplines are also useful for gathering data, and provide for management of small units of land. They encourage close co-operation between the trapper and the wildlife manager — a key to good fur management.

Research

Started in the late 1940s, research now provides a sound biological basis for fur management programs. It has led to a better knowledge of behavior, the development of

A northern trapper laces beaver pelt into willow hoop for curing, 1948.

aging techniques, the aerial census of beaver colonies, and the identification, study and monitoring of parasites and diseases.

Trapper workshops

These workshops are provided by the Ministry of Natural Resources in co-operation with the Ontario Trappers' Association. Courses are given on the biology and habits of furbearers, humane trapping techniques, skinning and preparation of pelts, and the preparation, care and repair of equipment. The workshops are updated and expanded continually, and make it possible for novice and seasoned trappers to gain more knowledge about their profession.

Licences

Every trapper, except a farmer on his own land, must obtain a licence and have it renewed every year. Farmer-trappers are issued a free permit annually. Each licence or permit has a number identifying the trapper and where he or she traps. This system is the basis for collecting information on trapper performance and the quality of pelts. This information is needed to determine harvest trends and animal population levels and cycles. It is also used to set seasons and harvest quotas.

Seasons

Furbearers may be trapped only during the open season. At one time, seasons were imposed to reduce the harvest, but now with populations at a high level, the seasons are primarily used to ensure that animals are taken when pelts are in prime condition.

Quotas

The main management tool used these days to control animal harvests is the setting of quotas, which is the allowable harvest level that a species can sustain. A trapper may be assigned annual quotas for any species which could be affected by over-harvesting. To guard against under-harvesting, the trapper is required to take at least 75 per cent of each quota. This reduces the possibility of over-population which could lead to deterioration of the habitat, increased stress among animals, or the outbreak of disease.



